

Improving Data Centre Efficiency with CFD and Smart Retrofitting

Achieving significant efficiency gains with simulation-driven retrofits

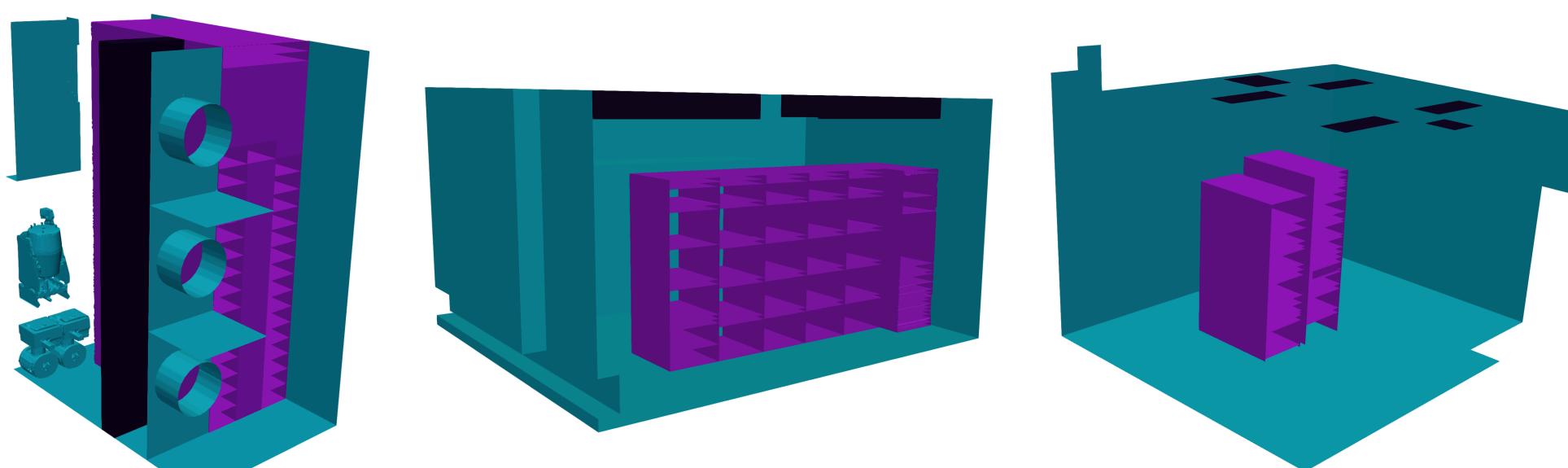
Why It Matters

- Manage rising power densities driven by AI
- Optimize your data centre design
- Eliminate hotspots before they occur
- Mitigate thermal risks
- Boost energy efficiency
- Reduce operational costs



What We Did

- Developed and validated our own CFD model
- Created detailed 3D models for our pilots
- Quantified the cooling performance and energy savings of pilots against KPIs
- Improved cooling efficiency by up to 75%
- Published our innovative approach and its proven results in an open-access publication



CFD Models for our pilot data centres

KPIs and Results

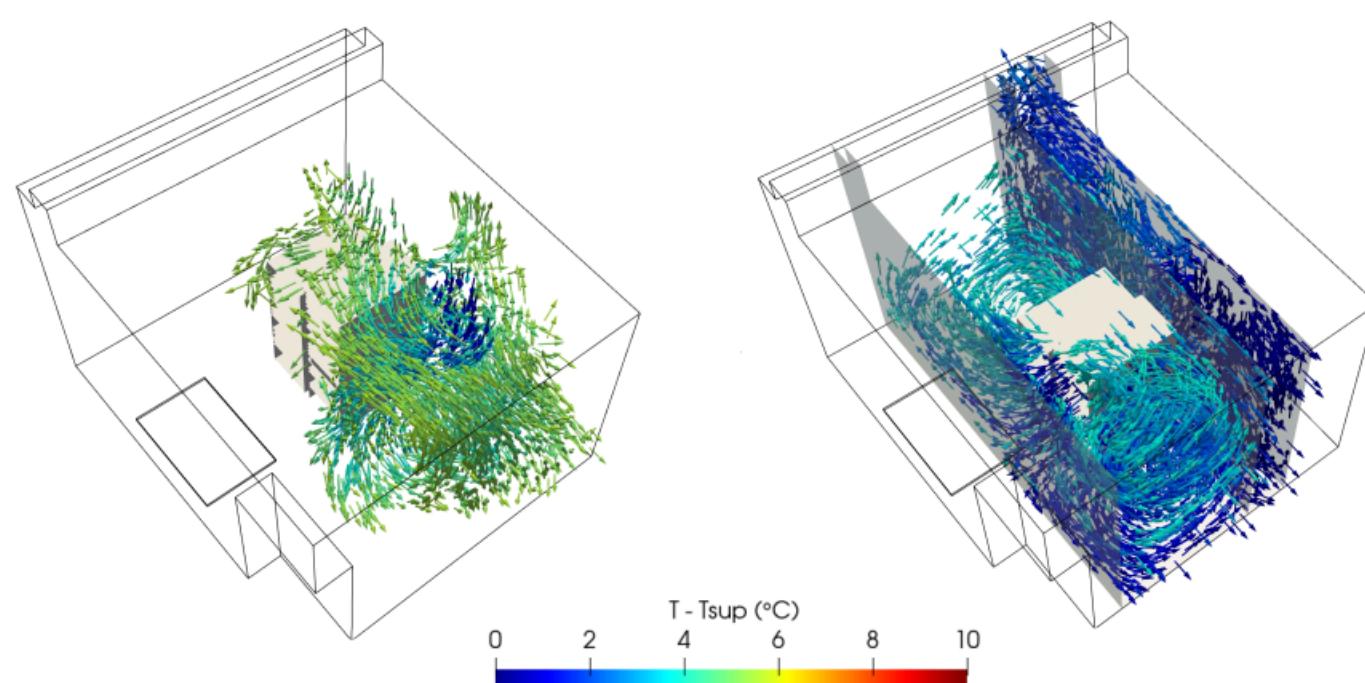
- Thermal KPIs monitored: RTI, RHI, RCI, RI, LI
- Efficiency Gains: from modest (~4%) to breakthrough (>200%)
- Waste Heat Reuse Potential: scenario-based CFD analysis shows significant recovery opportunities
- Discover our KPI-driven approach to energy efficiency: [Read](#)



Benefits and Impact



- Technological: Scalable open-source CFD framework for real data centres
- Economic: Lower OPEX through reduced cooling energy
- Environmental: Supports EU Green Deal & EED compliance
- Social/Competitive: Lower carbon footprint & competitive advantage



Smart retrofitting with CFD: boosting thermal efficiency and preventing hotspots.



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